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(Nekotorye dannye o sostave neytral'nykh kislorodnykh soyedineniy estonskoy slantsevoy smoly, kipyashchikh do 200°C)

Anne Kasberg

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Anne Kasberg

Neutral oxygen compounds (NOC) are the largest and most typical group of compounds of Estonian shale resin, but in view of their complex composition and lack of reliable methods of analysis very little is yet known about them. We have presented the general characteristics of NOC which boil under 300° [1]. Below we give some data on the individual composition of NOC which boil under 200°. This group of NOC is also present in the raw material used in the production of synthetic detergents, which necessitates additional methods and equipment in the technological system [2]. In connection with this, study of the composition of NOC of this fraction of resin is of interest from the point of view of both improving the quality of synthetic detergents and revealing the composition of these NOC as a new specific raw material for the chemical industry.

The initial material for the study was light resin of tunnel furnaces with a density of d_{20}^{20} 0.889. The resin sample was rectified to narrow-boiling fractions in a unit with separative power in 40 theoretic plates.

Oxygen compounds were separated from fractions boiling at temperatures between 66 and 200° by adsorption chromatography in an aluminum oxide column. To avoid a possible change in NOC under the effect of alkali, preliminary dephenolation of fractions was not conducted. Phenols which occur in NOC fractions do not change the analysis, as in the gas-chromatographic column, the liquid phase of which is polar polyethylene glycol; they are more strongly retained than NOC of corresponding fractions.

The ratio of adsorbent and separated substances was 8:1, the amount of the separated fraction — 10 g. Eluants were petroleum ether, diethyl ether and acetone. Subsequent gas-chromatographic analysis showed that petroleum ether

washed out hydrocarbons and oxygen compounds were eluted by diethyl ether and acetone.

Fractions boiling under 200° comprise 24% of the total initial resin. The average NOC content of this part of the resin, according to adsorption-chromatographic separation data, is 13%.

Analysis of NOC fractions was conducted in a UKh-1 gas chromatograph. Components were identified by the time of exit of standard substances — ketones of various structure, as well as reaction-gas chromatographic methods of establishing the hydrocarbon skeleton [3] and double bonds [4] of oxygen compounds and determination of oxygen compounds with a straight carbon chain [5].